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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,846	08/25/2006	Masaharu Ueda	1551-0158PUS1	4142
2292 7590 03/10/2011 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747				
EXAMINER KIECHLE, CAITLIN ANNE				
ART UNIT 1733		PAPER NUMBER		
NOTIFICATION DATE 03/10/2011		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/590,846

Applicant(s)

UEDA ET AL.

Examiner

CAITLIN FOGARTY

Art Unit

1733

Period for Reply
-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2, 17-20, 22 and 23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2, 17-20, 22 and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Status of Claims

1. Claims 2, 17 – 20, 22, and 23 are pending where claim 2 has been amended.
Claims 1, 3 – 16, and 21 have been cancelled.

Status of Previous Rejections

2. The 35 U.S.C. 112 second paragraph rejection of claims 2 and 23 as being indefinite has been withdrawn in view of the amended claims filed December 28, 2010.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claims 2, 17 – 20, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over the English machine translation of JP 2002-226914 (hereinafter JP '914) in view of the English machine translation of JP 11-350075 (hereinafter JP '075).

JP '914 in view of JP '075 is applied to claims 2, 17 – 20, and 23 as set forth in the October 1, 2010 Office action. Claim 2 has been amended.

With respect to amended instant claim 2, the abstract and [0009] of JP '914 teach a method for producing a steel rail having a high content of carbon comprising finish rolling the rail in two or more consecutive passes with a reduction rate per pass of a cross-section of the rail of 5-30% which is within the range recited in instant claim 2.

JP '914 differs from instant claim 2 because the composition of the steel rail taught by JP '914 does not contain N as required by claim 2. However, [0008] of JP '075 discloses a steel rail having a high content of carbon with an overlapping composition as seen in Table 1 below.

Table 1

Element	Instant Claim 2 (mass%)	JP '075 (mass%)	Overlapping Range (mass%)
C	0.85 – 1.40	0.60 – 1.20	0.85 – 1.20
Si	0.05 – 2.00	0.10 – 0.50	0.10 – 0.50
Mn	0.05 – 2.00	0.30 – 1.20	0.30 – 1.20
B	0.0001 – 0.0050	0.0001 – 0.0050	0.0001 – 0.0050
N	0.0060 – 0.0200	0.0060 – 0.0200	0.0060 – 0.0200
V	0.005 – 0.500	0.01 – 0.20	0.01 – 0.20
Nb	0.002 – 0.050	0.005 – 0.05	0.005 – 0.05
Optionally: Cr, Mo, Co, Cu, Ni, Ti, Mg, Ca, Al, Zr, V, and/or Nb	0.05 – 2.00 Cr 0.01 – 0.50 Mo 0.003 – 2.00 Co 0.01 – 1.00 Cu 0.01 – 1.00 Ni 0.0050 – 0.0500 Ti 0.0005 – 0.0200 Mg 0.0005 – 0.0150 Ca 0.0100 – 1.00 Al 0.0001 – 0.2000 Zr	0.05 – 2.00 Cr 0.01 – 0.20 Mo 0.1 – 2.0 Co 0.05 – 1.00 Cu 0.05 – 1.00 Ni 0.005 – 0.05 Ti ---- Mg ---- Ca ---- Al ---- Zr	0.05 – 2.00 Cr 0.01 – 0.20 Mo 0.1 – 2.0 Co 0.05 – 1.00 Cu 0.05 – 1.00 Ni 0.005 – 0.05 Ti ---- Mg ---- Ca ---- Al ---- Zr
Fe + Impurities	Balance	Balance	Balance

It would have been obvious to one of ordinary skill in the art to use the composition of the steel of JP '075 in the method of JP '914 because the steel of JP '075 may also be used as a rail steel and the addition of nitrogen in the steel prevents the oxidation of the impurity level of aluminum in the steel (see [0013] of JP '075).

JP '914 in view of JP '075 differs from instant claim 2 because they do not specifically teach expression 2. However, [0009] of JP '914 teaches that the time between rolling passes (S) is 10 seconds or less which overlaps with the time range (S)

recited in the instant claim. JP '914 also teaches that the surface temperature of the rail (T) is 900-1050°C and that the number of passes (P) is 2 or more. Therefore, JP '914 in view of JP '075 satisfies expression 2 if, for example, C is 1.20, T is 1000°C, and P is 4 then $CPT2=0.5$ which is within the claimed range of $S \leq CPT2 \leq 0.70$ where $0.10 \leq S \leq 0.70$. JP '914 in view of JP '075 also differs from instant claim 2 because they do not specifically teach that the finish rolling is performed so as to precipitate V-carbide, V-nitride, V-carbonitride, Nb-carbide, and Nb-carbonitride in austenite structure in the rail during the finish rolling. However, one of ordinary skill in the art would have expected the finish rolling step in the method of JP '914 in view of JP '075 to inherently precipitate V-carbide, V-nitride, V-carbonitride, Nb-carbide, and Nb-carbonitride in austenite structure in the rail as claimed in amended claim 2 since the method of JP '914 in view of JP '075 is substantially similar to the instant claimed method with overlapping temperatures and has a steel rail composition that overlaps with the instant claimed composition. See MPEP 2112. In addition, the prior art of JP '914 in view of JP '075 is not required to teach the same benefits as the instant claims. See MPEP 2144 IV.

6. Claims 2, 17, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 03/085149 A1 by use of the English equivalent US 2004/0187981 (hereinafter US '981).

US '981 is applied to claims 2, 17, 22, and 23 as set forth in the October 1, 2010 Office action. Claim 2 has been amended.

With respect to amended instant claim 2, [0028], [0084]-[0109], and [0200]-[0207] of US '981 teach a method for producing a steel rail having a high content of carbon with an overlapping composition as seen in Table 2 below.

Table 2

Element	Instant Claim 2 (mass %)	US '981 (mass %)	Overlapping Range (mass %)
C	0.85 – 1.40	0.65 – 1.40	0.85 – 1.40
Si	0.05 – 2.00	0.05 – 2.00	0.05 – 2.00
Mn	0.05 – 2.00	0.05 – 2.00	0.05 – 2.00
B	0.0001 – 0.0050	0.0001 – 0.0050	0.0001 – 0.0050
N	0.0060 – 0.0200	0.0040 – 0.0200	0.0060 – 0.0200
V	0.005 – 0.500	0.005 – 0.50	0.005 – 0.50
Nb	0.002 – 0.050	0.002 – 0.050	0.002 – 0.050
Optionally: Cr, Mo, Co, Cu, Ni, Ti, Mg, Ca, Al, Zr, V, and/or Nb	0.05 – 2.00 Cr	0.05 – 2.00 Cr	0.05 – 2.00 Cr
	0.01 – 0.50 Mo	0.01 – 0.50 Mo	0.01 – 0.50 Mo
	0.003 – 2.00 Co	0.10 – 2.00 Co	0.10 – 2.00 Co
	0.01 – 1.00 Cu	0.05 – 1.00 Cu	0.05 – 1.00 Cu
	0.01 – 1.00 Ni	0.05 – 1.00 Ni	0.05 – 1.00 Ni
	0.0050 – 0.0500 Ti	0.0050 – 0.0500 Ti	0.0050 – 0.0500 Ti
	0.0005 – 0.0200 Mg	0.0005 – 0.0200 Mg	0.0005 – 0.0200 Mg
	0.0005 – 0.0150 Ca	0.0005 – 0.0150 Ca	0.0005 – 0.0150 Ca
	0.0100 – 1.00 Al	0.0080 – 1.00 Al	0.0100 – 1.00 Al
	0.0001 – 0.2000 Zr	0.0001 – 0.2000 Zr	0.0001 – 0.2000 Zr
Fe + Impurities	Balance	Balance	Balance

US '981 also teaches that the method comprises finish rolling the rail in two or more

consecutive passes with a reduction rate per pass of a cross-section of the rail of 1-30% which overlaps with the instant recited range.

US '981 differs from instant claim 2 because it does not specifically teach expression 2. However, [0207] of US '981 discloses that the time between rolling passes (S) is not longer than 10 seconds which overlaps with the time range (S) recited in the instant claim. US '981 also teaches in [0202] and [0204] that the surface temperature of the rail (T) is 850-1000°C and that the number of passes (P) is 2 or more. Therefore, US '981 satisfies expression 2 if, for example, C is 1.20, T is 1000°C,

and P is 4 then $CPT2=0.5$ which is within the claimed range of $S \leq CPT2 \leq 0.70$ where $0.10 \leq S \leq 0.70$. US '981 also differs from instant claim 2 because it does not specifically teach that the finish rolling is performed so as to precipitate V-carbide, V-nitride, V-carbonitride, Nb-carbide, and Nb-carbonitride in austenite structure in the rail during the finish rolling. However, one of ordinary skill in the art would have expected the finish rolling step in the method of US '981 to inherently precipitate V-carbide, V-nitride, V-carbonitride, Nb-carbide, and Nb-carbonitride in austenite structure in the rail as claimed in amended claim 2 since the method of US '981 is substantially similar to the instant claimed method with overlapping temperatures and has a steel rail composition that overlaps with the instant claimed composition. See MPEP 2112. In addition, the prior art of US '981 is not required to teach the same benefits as the instant claims. See MPEP 2144 IV.

7. Claims 2, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over the English machine translation of JP 2002-226914 (hereinafter JP '914) in view of US 6,086,685 (hereinafter US '685).

JP '914 in view of US '685 is applied to claims 2, 22, and 23 as set forth in the October 1, 2010 Office action. Claim 2 has been amended.

With respect to amended instant claim 2, the abstract and [0009] of JP '914 teach a method for producing a steel rail having a high content of carbon comprising finish rolling the rail in two or more consecutive passes with a reduction rate per pass of a cross-section of the rail of 5-30% which is within the range recited in instant claim 2.

JP '914 differs from instant claim 2 because it does not teach an overlapping composition. However, col. 3 lines 14-19 and col. 6 line 1-col. 7 line 13 of US '685 disclose a steel rail having a high content of carbon with an overlapping composition as seen in Table 3 below.

Table 3

Element	Claims 2 & 22 (mass %)	US '685 (mass %)	Overlapping Range (mass %)
C	0.85 – 1.40	0.41 – 1.3	0.85 – 1.3
Si	0.05 – 2.00	≤ 0.93	0.05 – 0.93
Mn	0.05 – 2.00	0.31 – 2.55	0.31 – 2.00
B	0.0001 – 0.0050	≤ 0.006	0.0001 – 0.0050
N	0.0060 – 0.0200	----	----
V	0.005 – 0.500	≤ 0.39	0.005 – 0.39
Nb	0.002 – 0.050	≤ 0.28	0.002 – 0.050
Optionally: Cr, Mo, Co, Cu, Ni, Ti, Mg, Ca, Al, Zr, V, and /or Nb	0.05 – 2.00 Cr	0.21 – 2.45 Cr	0.21 – 2.00 Cr
	0.01 – 0.50 Mo	≤ 0.88 Mo	0.01 – 0.50 Mo
	0.003 – 2.00 Co	---- Co	---- Co
	0.01 – 1.00 Cu	---- Cu	---- Cu
	0.01 – 1.00 Ni	≤ 2.4 Ni	0.01 – 1.00 Ni
	0.0050 – 0.0500 Ti	≤ 0.28 Ti	0.0050 – 0.0500 Ti
	0.0005 – 0.0200 Mg	---- Mg	---- Mg
	0.0005 – 0.0150 Ca	---- Ca	---- Ca
	0.0100 – 1.00 Al	≤ 0.06 Al	0.0100 – 0.06 Al
	0.0001 – 0.2000 Zr	≤ 0.28 Zr	0.0001 – 0.2000 Zr
Fe + Impurities	Balance	Balance	Balance

US '685 differs from instant claim 2 because it does not specifically teach that the steel rail comprises nitrogen. However, the claimed minimum amount of 0.0060 mass% N is an impurity level and it is well known in the art that nitrogen is a naturally occurring impurity in steel. It would have been obvious to one of ordinary skill in the art to use the composition of the steel of US '685 in the method of JP '914 because the steel of US '685 may also be used as a rail steel and the range of components of US '685 allows for a reasonably priced chemical alloy composition (see col. 7 lines 54-56 of US '685).

JP '914 in view of US '685 differs from instant claim 2 because they do not specifically teach expression 2. However, [0009] of JP '914 teaches that the time between rolling passes (S) is 10 seconds or less which overlaps with the time range recited in the instant claim. JP '914 also teaches that the surface temperature of the rail (T) is 900-1050°C and that the number of passes (P) is 2 or more which overlaps with the claimed range of P. Therefore, JP '914 in view of US '685 satisfies expression 2 if, for example, C is 1.20, T is 1000°C, and P is 4 then $CPT2=0.5$ which is within the claimed range of $S \leq CPT2 \leq 0.70$ where $0.10 \leq S \leq 0.70$. JP '914 in view of US '685 also differs from instant claim 2 because they do not specifically teach that the finish rolling is performed so as to precipitate V-carbide, V-nitride, V-carbonitride, Nb-carbide, and Nb-carbonitride in austenite structure in the rail during the finish rolling. However, one of ordinary skill in the art would have expected the finish rolling step in the method of JP '914 in view of US '685 to inherently precipitate V-carbide, V-nitride, V-carbonitride, Nb-carbide, and Nb-carbonitride in austenite structure in the rail as claimed in amended claim 2 since the method of JP '914 in view of US '685 is substantially similar to the instant claimed method with overlapping temperatures and has a steel rail composition that overlaps with the instant claimed composition. See MPEP 2112. In addition, the prior art of JP '914 in view of US '685 is not required to teach the same benefits as the instant claims. See MPEP 2144 IV.

Response to Arguments

8. Applicant's arguments filed December 28, 2010 have been fully considered but they are not persuasive.

Arguments are summarized as follows:

- a. JP '914 teaches only V-carbide and Nb-carbide, etc., on precipitate in ferrite portion in pearlite structure. In other words, JP '914 fails to teach that finish rolling is performed so as to precipitate V-carbide, V-nitride, V-carbonitride, Nb-carbide, and Nb-carbonitride in austenite structure during finish rolling.
- b. JP '075 relates to a pearlite rail. Therefore, JP '075 is silent as to precipitation in austenite structure during finish rolling.
- c. US '981 only teaches that V-carbide and Nb-carbide, etc., form during cooling after hot rolling. In other words, US '981 does not teach that finish rolling is performed so as to precipitate V-carbide, V-nitride, V-carbonitride, Nb-carbide, and Nb-carbonitride in austenite structure during finish rolling.

Examiner's responses are as follows:

- a. As discussed in the above rejection, JP '914 in view of JP '075 differs from amended instant claim 2 because they do not specifically teach that the finish rolling is performed so as to precipitate V-carbide, V-nitride, V-carbonitride, Nb-carbide, and Nb-carbonitride in austenite structure in the rail during the finish rolling. However, one of ordinary skill in the art would have expected the finish rolling step in the method of JP '914 in view of JP '075 to inherently precipitate V-carbide, V-nitride, V-carbonitride, Nb-carbide, and Nb-carbonitride in austenite structure in the rail as claimed in amended claim 2 since the method of JP '914 in view of JP '075 is substantially similar to the instant claimed method with overlapping temperatures and has a steel rail composition that overlaps with the

instant claimed composition. See MPEP 2112. In addition, the prior art of JP '914 in view of JP '075 is not required to teach the same benefits as the instant claims. See MPEP 2144 IV.

b. The instant invention also relates to a pearlite rail as recited in [0001] of the instant specification. In addition, JP '075 is relied on by the Examiner to teach the recited steel rail composition and is not relied on for the recited method. Rather, JP '914 is relied on for teaching the instant claimed method steps. As discussed above, JP '914 differs from instant claim 2 because the composition of the steel rail taught by JP '914 does not contain N as required by claim 2. However, [0008] of JP '075 discloses a steel rail having a high content of carbon with an overlapping composition as seen in Table 1 above. It would have been obvious to one of ordinary skill in the art to use the composition of the steel of JP '075 in the method of JP '914 because the steel of JP '075 may also be used as a rail steel and the addition of nitrogen in the steel prevents the oxidation of the impurity level of aluminum in the steel (see [0013] of JP '075).

c. As discussed in the above rejection, US '981 differs from instant claim 2 because it does not specifically teach that the finish rolling is performed so as to precipitate V-carbide, V-nitride, V-carbonitride, Nb-carbide, and Nb-carbonitride in austenite structure in the rail during the finish rolling. However, one of ordinary skill in the art would have expected the finish rolling step in the method of US '981 to inherently precipitate V-carbide, V-nitride, V-carbonitride, Nb-carbide, and Nb-carbonitride in austenite structure in the rail as claimed in amended claim 2

since the method of US '981 is substantially similar to the instant claimed method with overlapping temperatures and has a steel rail composition that overlaps with the instant claimed composition. See MPEP 2112. In addition, the prior art of US '981 is not required to teach the same benefits as the instant claims. See MPEP 2144 IV.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CAITLIN FOGARTY whose telephone number is (571)270-3589. The examiner can normally be reached on Monday - Friday 8:00 AM - 5:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ Roy King/
Supervisory Patent Examiner, Art
Unit 1733

CF